

REMARKS

Applicants acknowledge the indication of the allowability of the subject matter of Claims 2 and 6 as set forth in paragraph 12 of the Office Action. In particular, the latter claims would be allowable if rewritten in independent form. However, for the reasons set forth hereinafter, Applicants respectfully submit that Claims 2 and 6 are allowable in their present dependent form.

Applicants acknowledge paragraph 5 of the Office Action, indicating that the declaration for this application is defective in that it contains non-initialed or non-dated alterations. However, Applicants respectfully submit that a new declaration is not necessary in this case. It is noted in this regard that the alteration in question consists of a change of address for the inventor Andreas Christen, which appears immediately adjacent his signature. Accordingly, the corrected address is clearly associated with the signature, and additional initialing should be redundant and unnecessary. More importantly, however, Applicants have submitted herewith an Application Data Sheet correctly identifying the inventor's address. Since it is clear that such information may be provided in the Application Data Sheet and/or corrected in the Application Data Sheet, Applicants submit that it is proper for them to supply the correct address in this manner.

The drawings have been objected to under 37 C.F.R. §1.84(p)(5) because they include a reference numeral 13, which is not mentioned in the specification. In response to this ground of objection, Applicants have inserted a reference to

“line 13” into paragraph [0020] at page 8 of the specification. Accordingly, reconsideration and withdrawal of this ground of objection is respectfully requested.

In response to the Examiner's observation in paragraph 7 of the Office Action, Claim 1 has been amended in the manner suggested.

Claims 1, 3-5 and 7 have been rejected under 35 U.S.C. §102(e) as anticipated by Acker et al (Published U.S. Patent Application No. US2002/0122966 A1). However, for the reasons set forth hereinafter, Applicants respectfully submit that all claims remaining of record and being prosecuted in this application distinguish over the Acker et al reference. (Claims 8-14 have been withdrawn from consideration pursuant to the Applicants' election of Claims 1 through 7 in a response dated May 20, 2003.)

The present invention is directed to a fuel cell system which insures good cold starting performance, and exhibits sufficient antifreeze properties. In particular, direct methanol fuel cells (DMFC) are subject to freezing in that the fuel is provided to the fuel cell in the form of liquid methanol mixed with water. Due to the presence of water, it is important to assure that the temperature of the fuel cell remains above the freezing point of the mixture, which is slightly below 0°C.

For the latter purpose, the fuel cell system according to the invention includes a temperature sensor which senses either ambient temperature, the temperature in the interior of an anode line which supplies fuel to the anode

chamber (Claim 6) or the interior of either the cathode feed line or the cathode discharge line. Based on the temperature thus detected, the operating medium (in this case, for example, methanol) is metered and fed to the cathode space. In particular, Claim 2 (which has been indicated to contain allowable subject matter) recites that the operating medium is introduced into the cathode feed line. Similarly, Claim 3 recites that operating medium is fed via a line which is connected between the anode line and the cathode feed line.

Furthermore, Claim 1 as amended further recites that the fuel cell system includes a control unit which controls operation of the metering device that meters and feeds operating medium to the cathode space, and continues its operation as a function of the determined temperature, for a predetermined time period after the fuel cell system is switched off, until a uniform operating medium concentration has been achieved in the fuel cell system. The latter feature is neither taught nor suggested by the Acker et al reference.

With regard to Claim 3, Applicants note that the Acker et al reference does not teach or suggest the provision of a device for metering and feeding operating medium connected between the anode line and the cathode feed line, and accordingly, Claim 3 should be allowable for the same reason Claim 2 is allowable. In addition, with regard to Claim 7, the Office Action notes at page 7 that Claim 6 of Acker et al recites that the system supplies fuel directly into the cathode whenever the temperature is below a predetermined value. This disclosure, however, does not appear to be germane to Claim 7, which recites that the temperature sensor records the temperature in either the cathode space,

the interior of the cathode feed line or the interior of the cathode discharge line. The Acker et al reference states only that the temperature sensor senses the temperature "in the DMFC", as noted at paragraphs [0029] and [0037]. Consistently, paragraph [0009] of Acker et al states that the temperature sensor "detects the temperature within the cell". It contains no suggestion that the temperature sensors sense the temperature in the specific locations recited in Claim 7. Accordingly, Claim 7 is believed to be allowable for the same reason as is Claim 6.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/50206).

Respectfully submitted,



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